WHAT IS CLAIMED IS:

1. An instrument for performing interferometry comprising:

first and second lengths of multimode optical fiber;

an optical coupler for coupling light to and from respective first ends of said first and second lengths of multimode optical fiber;

a first mirror at a second end of said first multimode optical fiber for reflecting the light therein;

a second mirror at a second end of said second multimode optical fiber for reflecting the light therein;

wherein at least said first mirror is a scannable mirror;

means for scanning said scannable mirror;

a detector coupled to said optical coupler for receiving at least a portion of the light reflected from said first and second mirrors and producing an output signal representative thereof;

wherein said first and second multimode optical fibers produce a modal dispersion of light therein and an effect of modal dispersion is present in the output signal produced by said detector, and

a processor coupled to said detector for reducing the effect of modal dispersion of the output signal.

2. The instrument of claim 1 wherein said means for scanning comprises:

a member movable in a fluid-filled optical waveguide and carrying said first mirror, and a motor for moving the member in the fluid-filled optical waveguide; and/or

an expandable and contractible core around which said first multimode optical fiber is wound.

3. The instrument of claim 2 wherein said member includes magnetic and/or ferromagnetic material, and wherein said motor includes a magnet moveable longitudinally adjacent the fluid-filled optical waveguide.

5. The instrument of claim 2 wherein said motor is an electrostatic motor having a plurality of electrodes spaced apart along the fluid-filled optical waveguide, and wherein said member is dielectric and includes a plurality of spaced apart electrodes thereon.

6. The instrument of claim 2 wherein said expandable and contractible core includes a thermally expansive material, a piezoelectric material, and/or an electrostrictive material, further comprising:

means for applying an electrical signal to said core to cause the piezoelectric material and/or electrostrictive material thereof to expand and contract, and/or for applying an electrical signal to a heater element proximate said core to cause the thermally expansive material thereof to expand and contract.

7. The instrument of claim 1 wherein both of said first and second mirrors are scannable mirrors, and wherein said means for scanning scans the first and second mirrors oppositely.

8. The instrument of claim 1 further comprising a multimode optical fiber for coupling said detector and said optical coupler.

9. An instrument for performing spectroscopy comprising:

a laser for illuminating a sample with light;

a first length of multimode optical fiber for receiving light reflected from or passing through the sample;

second and third lengths of multimode optical fiber;

an optical coupler for receiving light from said first length of multimode optical fiber and for coupling light to and from respective first ends of said second and third lengths of multimode optical fiber;

a first mirror at a second end of said second multimode optical fiber for reflecting the light therein;

a second mirror at a second end of said third multimode optical fiber for reflecting the light therein;

wherein at least said first mirror is a scannable mirror;

means for scanning said scannable mirror;

a detector coupled to said optical coupler for receiving at least a portion of the light reflected from said first and second mirrors for producing an output signal representative thereof;

wherein said first, second and third multimode optical fibers produce a modal dispersion of light therein and an effect of modal dispersion is present in the output signal produced by said detector; and

a processor coupled to said detector for reducing the effect of modal dispersion of the output signal.

10. The instrument of claim 9 wherein said means for scanning comprises:

a member movable in a fluid-filled optical waveguide and carrying said first mirror, and a motor for moving the member in the fluid-filled optical waveguide; and/or

an expandable and contractible core around which said second multimode optical fiber is wound.

11. The instrument of claim 10 wherein said member includes magnetic and/or ferromagnetic material, and wherein said motor includes a magnet moveable longitudinally adjacent the fluid-filled optical waveguide.

12. The instrument of claim 10 wherein said motor is an electrostatic motor having a plurality of electrodes spaced apart along the fluid-filled optical waveguide, and wherein said member is dielectric and includes a plurality of spaced apart electrodes thereon.

13. The instrument of claim 10 wherein said expandable and contractible core includes a thermally expansive material, a piezoelectric material, and/or an electrostrictive material, and wherein said processor applies an electrical signal to said core to cause the piezoelectric material and/or electrostrictive material thereof to expand and contract, and/or for applying an electrical signal to a heater element proximate said core to cause the thermally expansive material thereof to expand and contract.

14. The instrument of claim 9 wherein both of said first and second mirrors are scannable mirrors, and wherein said means for scanning scans the first and second mirrors oppositely.

15. A method for reducing the effect of modal dispersion in an optical instrument resulting from at least one multimode optical element therein, the method comprising:

providing a source of substantially monochromatic light;

detecting spectral data responsive to the substantially monochromatic light, the spectral data including effects of modal dispersion;

detecting a response function responsive to the substantially monochromatic light, the response function including effects of modal dispersion; and

convolving the spectral data and the response function for producing deconvoluted spectral data wherein effects of modal dispersion are reduced.

16. The method of claim 15 wherein said providing a source of light includes providing substantially monochromatic light at a first wavelength for said detecting spectral data and said detecting a response function.

17. The method of claim 15 wherein said providing a source of light includes:

providing substantially monochromatic light at a first wavelength for said detecting spectral data; and

providing substantially monochromatic light at a second wavelength for said detecting a response function.

18. The method of claim 15 wherein said detecting a response function comprises extracting the response function from the spectral data.

19. The method of claim 18 wherein said extracting comprises convolving the spectral data and low-pass filtering the convolved spectral data.

20. The method of claim 15 wherein said convolving comprises:

dividing one of the spectral data and the response function by the other thereof; and

Fourier transforming the divided spectral data and response function.

21. The method of claim 15 wherein said detecting a response function comprises:

Fourier transforming the spectral data responsive to the substantially monochromatic light;

low-pass filtering the transformed spectral data; and

inverse Fourier transforming the filtered transformed spectral data.

22. A storage medium encoded with machine-readable computer instructions for reducing the effect of modal dispersion in an optical instrument resulting from at least one multimode optical element therein, the optical instrument having a source of substantially monochromatic light, comprising:

means for causing the computer to receive spectral data responsive to the substantially monochromatic light, the spectral data including effects of modal dispersion;

means for causing the computer to receive a response function responsive to the substantially monochromatic light, the response function including effects of modal dispersion; and

means for causing the computer to convolve the spectral data and the response function for producing deconvoluted spectral data wherein effects of modal dispersion are reduced.

23. The storage medium of claim 22 wherein said providing a source of light includes providing substantially monochromatic light at a first wavelength for said detecting spectral data and said detecting a response function.

24. The storage medium of claim 22 wherein the source of light provides substantially monochromatic light at a first wavelength for said means for causing the computer to receive spectral data and provides substantially monochromatic light at a second wavelength for said means for causing the computer to receive a response function.

25. The storage medium of claim 22 wherein said means for causing the computer to receive a response function comprises means for causing the computer to extract the response function from the spectral data.

26. The storage medium of claim 25 wherein said means for causing the computer to extract comprises means for causing the computer to convolve the spectral data and means for causing the computer to low-pass filter the convolved spectral data.

27. The storage medium of claim 22 wherein said means for causing the computer to convolve comprises:

means for causing the computer to divide one of the spectral data and the response function by the other thereof; and

means for causing the computer to Fourier transform the divided spectral data and response function.

28. The storage medium of claim 22 wherein said means for causing the computer to receive a response function comprises:

means for causing the computer to Fourier transform the spectral data responsive to the substantially monochromatic light;

means for causing the computer to low-pass filter the transformed spectral data; and

means for causing the computer to inverse Fourier transform the filtered transformed spectral data.